ENTOMOLOGICAL NEWS

APRIL 1955

Vol. LXVI **No. 4**

CONTENTS

Rehn—One hundred years of work on the Dermaptera 85

Williams—Observations on some Heleidae 93

Benesh—Notes on neotropical stagbeetles 97

Dreisbach—New species of Dipogon and Minagenia 104

Crabill—Concerning the genotypes of Bothropolys, etc. 107

Review—A manual of the dragonflies of North America 110

Nomenclature Notice 111

PUBLISHED MONTHLY, EXCEPT AUGUST AND SEPTEMBER, BY
THE AMERICAN ENTOMOLOGICAL SOCIETY
PRINCE AND LEMON STS., LANCASTER, PA.
AND
1900 RACE STREET, PHILADELPHIA 3, PA.

Subscription, per yearly volume of ten numbers: $5.00 domestic; $5.30 foreign; $5.15 Canada. Entered as second-class matter April 19, 1943, at the post office at Lancaster, Pa., under the Act of March 3, 1879. Acceptance for mailing at the special rate of postage provided for in paragraphs (d-2), Section 34.40, P. L. & R. of 1948, authorized April 19, 1943.

ENTOMOLOGICAL NEWS

ENTOMOLOGICAL NEWS is published monthly, excepting August and September, by The American Entomological Society at Prince and Lemon Sts., Lancaster, Pa., and the Academy of Natural Sciences, 1900 Race Street, Philadelphia 3, Pa., U. S. A.

PHILIP P. CALVERT, Editor Emeritus. R. G. SCHMIEDER, Editor. Editorial Staff: H. J. Grant, Jr., E. J. F. MARX, M. E. PHILLIPS, and J. A. G. REHN.

Subscription price, per yearly volume of 10 numbers: Domestic, $5.00; Foreign, $5.30; Canada, $5.15—U. S. Currency.

SUBSCRIPTIONS: Communications and remittances to be addressed to **Entomological News, 1900 Race Street, Philadelphia 3, Pa.**

ADVERTISEMENTS: Rate schedules available on request. Address, **Fred B. Jacobson, Advertising Manager, Entomological News, 1900 Race Street, Philadelphia 3, Pa.**

MANUSCRIPTS and all communications concerning same should be addressed to **R. G. Schmieder, Zoological Laboratory, University of Pennsylvania, Philadelphia 4, Pa.**

The receipt of all papers will be acknowledged and, if accepted, they will be published as soon as possible. If not accepted, authors will be so advised and postage requested for return of manuscripts. Articles longer than six printed pages may be published in two or more installments, unless the author is willing to pay for the cost of a sufficient number of additional pages in any one issue to enable such an article to appear without division.

ILLUSTRATIONS. Authors will be charged as follows: For text-figures, the cost of engraving; for insert plates (on glossy stock), the cost of engraving plus the cost of printing. The size of text-figures or plates when printed must not exceed 4 x 6 inches.

All blocks will be sent to authors after publication. It is not advisable to print half-tones as text-figures.

TABLES: Authors will be charged the setting of all tables exceeding 2 inches in height.

SEPARATA: Twenty-five extras of an author's contribution will be given free. They will be "run of form," without removal of extraneous matter, folded but not bound, uncut and without cover.

Authors wishing more than the 25 separates must so advise the Editor or the printer. See bottom of this page. The Editor requests that authors state the number of separates desired in a letter accompanying their manuscript.

SEPARATES of articles without covers, without extraneous matter, will be furnished by the printer at the following prices: 1–4 pages, 25 copies, $3.13; 50 copies, $3.13; 100 copies, $3.75. 5–8 pages, 25 copies, $5.00; 50 copies, $5.00; 100 copies, $5.94. 9–12 pages, 25 copies, $7.81; 50 copies, $7.81; 100 copies, $9 06. Covers: first 50, $3.44; additionals at .025 cents each. Plates, printed on one side: first 50, $2.50; additional at 0.188 cents each. Transportation charges will be extra. THE LANCASTER PRESS, INC., Lancaster, Pa.

ENTOMOLOGICAL NEWS

VOL. LXVI APRIL, 1955 No. 4

A Resumé of One Hundred Years of Systematic Work on the Dermaptera

By JAMES A. G. REHN, Curator of Insects, Academy of Natural Sciences of Philadelphia

Because of their superficial resemblance to members of the Staphylinidae, Linnaeus included the earwigs in the Coleoptera, but DeGeer, in 1773, placed them in his order Dermaptera, which as then proposed was equivalent to the later Orthoptera of Olivier and Latreille. First considered a distinct order by William Kirby in 1813, that author restricted DeGeer's name Dermaptera to it. However, Westwood in 1831 felt called upon to use another ordinal name and proposed Euplekoptera (later emended by him to Euplexoptera), while Burmeister in 1838 emended Dermaptera to Dermatoptera. However, for about a century, there has been relatively general agreement to use DeGeer's term Dermaptera for the earwigs.

Little critical work of a classificatory character other than the description of genera and species was done prior to 1860, except for Serville's classic 1831 and 1839 works, in which some few genera were created, and with these we have the virtual beginnings of our present earwig classification as far as genera are concerned.

In 1863 to 1865 there saw the light in the Stettin Zeitung, the first serious attempt to put together a classification of the earwigs of the world, this being Heinrich Dohrn's "Versuch einer Monographie der Dermapteren." While Dohrn gave us a new viewpoint and a far more comprehensive picture than was available previously, he made no attempt to name the supra-

generic categories into which he divided the Dermaptera by means of the dichotomous keys spread through his pages. He did, however, add to our knowledge by describing six new genera and over sixty new species yet considered valid.

In 1871 Francis Walker described from West Africa a new unusual eyeless and apterous insect, which he placed among the crickets, as *Hemimerus talpoides*. While this was stated in 1890 by Aurivillius to be an ectoparasite, it was not until Sharp, in 1895 in the Cambridge Natural History, made a careful study of the insect that it was regarded as a dermapteron, representing a very distinct section of the order. We now know *Hemimerus* to be viviparous.

In 1876 Samuel Scudder gave us two important studies, the first on earwigs by an American, which were mile-stones in the development of our knowledge of the Dermaptera. One of these, a "Brief Synopsis of North American Earwigs, with an Appendix of the fossil Species," was the first synopsis of the species of America north of Panama. Presented largely as a key to the genera and species involved, it added fourteen species to our fauna.- The other study, i.e. "Critical and Historical Notes on Forficulariae; including Descriptions of New Generic Forms and an Alphabetical Synonymic List of the Described Species," was of particular value in that, although no new classification was presented, it supplied a comprehensive catalogue of the systematics of the order up to that time, and also proposed four new generic names, two of which are now used as the basis for names of family or subfamily units. The bibliographic value of the last mentioned paper is fundamental even at the present time.

In 1879 a French army officer, August Durieu Dubrony (who subsequently changed his name to August de Bormans), began to publish extensive papers on the Dermaptera, and during the latter part of the nineteenth century his numerous contributions added greatly to our knowledge of the specific components of the order. His objective was the production of a monograph of the Dermaptera, but failing health and physical disablement prevented the appearance of this in his active years. However,

his study, prepared originally in French and translated into German by Hermann Krauss, appeared in 1900 as the eleventh lieferung of "Das Tierreich" series, entitled "Forficulidae und Hemimeridae," by de Bormans and Krauss, the section on the Hemimeridae by Krauss alone. While very faulty in many respects and lacking in breadth this work was, however, of value in bringing together under one cover a systematic picture of the order as interpreted in the literature of the last decades of the century. Soon to be replaced, it was largely a compilation, yet remains a landmark in our knowledge of the subject. In this 1900 monograph no attempt was made to erect or characterize groups higher than genera.

In the late nineties papers on earwigs began to appear from the pen of a brilliant English scholar, Malcolm Burr, who in the meantime had acquired the De Bormans collection. His numerous studies soon outnumbered those which came from the pen of any prior or contemporary student of the order. His many studies, the greatest series of this character produced by any single worker, were, as he stated, intended to be contributory to an eventual monograph of the order.

In 1902 the German zoologist Karl W. Verhoeff brought out two very important and critical papers on Dermaptera, in which for the first time the order was considered to contain more than a single family. Using internal genitalia as a major criterion he divided the order into two suborders (Eudermaptera and Paradermaptera), the former with nine families, the latter with one. While these studies were poorly balanced, based in some cases on defective material, and weak in numerous respects, they gave us a very different concept of the order from what had been put forward by De Bormans and Krauss, and while he failed to amplify his work on the earwigs, Verhoeff's background, modified and elaborated subsequently by both Burr and Zacher, furnished us with a greatly needed new approach. In the two papers mentioned seventeen additional genera were described by Verhoeff, some unfortunately on very defective or insufficient material.

Almost contemporaneous with Burr's early work the Italian entomologist Alfredo Borelli began centering his attention on the earwigs, and from approximately the turn of the century until the thirties of the present one he produced a large number of contributions, chiefly descriptions of new species and faunistic studies, which added greatly to our knowledge of specific entities of the order, as well as their faunistic associations.

In 1909 Karl Jordan, of Tring, added to our knowledge of the Dermaptera an exceedingly aberrant member when he described the family Arixeniidae, and the genus and species *Arixenia esau*, on the basis of a single specimen taken from the wing pouch of a Malayan naked bat (*Cheiromeles torquatus*) from Borneo. A subsequently described species (*A. jacobsoni* Burr) was found in numbers on the walls of a bat cave in Java, and the exact relation of *Arixenia* to the mammals with which it has been found associated is still unsettled, although the isolated character of the family is universally endorsed by all students, most of whom give it the status of a suborder. Also in 1909 Burr, in a preliminary review, presented the outline of his projected reclassification of the earwigs, in which he discussed much of Verhoeff's work on the basis of his own broad acquaintance with these insects, and sketched out the general scheme which he elaborated in his later work in the "Genera Insectorum" series. In this preliminary work he distinguished five families of earwigs, as opposed to nine proposed by Verhoeff, but at that date did not attempt to define the higher categories of the order.

The years 1910 and 1911 witnessed the production of four important studies on the classification of the Dermaptera, two by Friedrich Zacher, and two by Burr. In 1910 Zacher brought out the first part of a projected revision of the order, this dealing with the classification of the Protodermaptera (a term then proposed for a major grouping called Diandria by Verhoeff); the next year this was followed by further studies on the same section of the order. In these he reviewed the previous work of Verhoeff and Burr on this complex entity, and proposed a new arrangement dividing Verhoeff's Eudermaptera into two

suborders (Eudermaptera and Protodermaptera), recognized thirteen families and also transferred Verhoeff's Karschiellidae from the Eudermaptera to the Protodermaptera. Zacher's studies extended the use Verhoeff made of male genitalic features, in fact most of his new genera and species were based largely on genitalic features. As Burr noted the same year Zacher's work "represents an enormous advance upon that of Verhoeff" and further "rendered comprehensible and amplified to a very large degree" Verhoeff's studies.

Burr's 1910 important contribution was the Dermaptera volume of the "Fauna of British India" series, a work of over two hundred pages, in the introduction to which is presented the best summary of the general structure, development, basic life history, and broad analysis of the distribution of the order we possess, as well as the first outstanding study of the systematics of the earwigs of any considerable area of the world. In 1911 the same author brought out the Dermaptera volume of the "Genera Insectorum" series, which has served as a reference basis for most of the systematic work done on these insects in the last few decades, and it is in essence the best presentation we have of Burr's general conclusions on the components down to at least the generic level. Briefly he divided the Dermaptera into three suborders, the Arixenina, containing only the bat cave inhabiting *Arixenia,* the Hemimerina including the even more aberrant ectoparasite *Hemimerus,* and the Forficulina, embracing the earwigs or the remainder of the order. Of the latter he recognized three superfamilies; Protodermaptera, as defined by Zacher and consisting of two families, Paradermaptera, as erected by Verhoeff for the family Apachyidae, and Eudermaptera, consisting of three families. The classification used in this work is a great advance over most which preceded it, yet is essentially conservative in that it maintained a reasonable level of relative values for supra-generic entities.

The dislocations of the First World War and subsequent events compelled Burr, the greatest student the Dermaptera had ever had, to abandon permanently his long contemplated monograph of the order. In 1915–16, however, there appeared from

his pen a series of notes and observations on many species of much constructive value, but the imperativeness of foreign military service prevented the author from giving to his notes the coordination of subject material which was usual in his publications. In spite of their many deficiencies these notes, which appeared in the Journal of the Royal Microscopical Society, are of definite value and represent in many cases the mature conclusions of our foremost authority. In them Burr modified his 1911 "Genera Insectorum" higher arrangement to the extent that he sunk the Paradermaptera, and regarded the Apachyidae as a family within the Protodermaptera.

In the several decades following the appearance of the last-mentioned paper by Burr, many less comprehensive but important studies, largely of faunistic character or making known additional genera and species, appeared from the pens of a number of authors, in America these being A. N. Caudell, Morgan Hebard and J. A. G. Rehn, and in Germany Klaus Günther. In 1934–35 several important studies on the systematics and morphology of the aberrant genus *Hemimerus,* the sole member of the suborder Hemimerina, appeared from the pen of Lucien Chopard, the French orthopterist, which amplified our knowledge of that very unusual type, while in 1935 there also was published by J. A. G. Rehn and John W. H. Rehn a study of the same genus which, in addition to elaborating our knowledge of its species, discussed previously unnoticed correlations of parts of this ectoparasite's structure with the hair texture of various forms of the host giant rats of the genus *Cricetomys.*

In 1936 G. J. Bey-Bienko, the Russian orthopterist, brought out in the Dermaptera volume of the "Fauna of the U. S. S. R.," an important work of over two hundred pages and many figures, the text in Russian with a comprehensive English summary. In this the author followed Martynov (1925) in considering the Hemimerina of Burr an independent order (Hemimeroidea), created a suborder Archidermaptera for *Photodiplatys* of Martynov, described from the Jurassic of Kazakstan, retained the Arixenina as a suborder of equal rank to the Dermaptera s.s., and regarded the Protodermaptera and Eudermaptera as super-

families of the latter suborder. Even though much of the text is virtually a sealed book to the average taxonomic entomologist, the English summary is well balanced and a most useful aid on that fauna of much of the Palearctic and bordering areas of the Oriental realm.

In 1949, Lucien Chopard presented, in the ninth volume of Grasse's "Traité de Zoologie," the most recent classificatory sketch of existing Dermaptera. He regards the order as composed of three suborders; the Arixenioidea, the Diploglossata (this being a name based on an erroneous morphological deduction, first used in 1879 by Saussure for *Hemimerus*), and the Forficuloidea. In the latter suborder he follows the arrangement of superfamilies and families used by Burr in his "Genera Insectorum" work.

In the past decade our most active student of the Dermaptera has been W. D. Hincks, of the Manchester Museum, who has brought out a number of contributions on the subject.

It can now be said our knowledge of the fossil aspect of the Dermaptera goes back definitely as far as the Jurassic of Central Asia, and in addition we now are acquainted with more than a score of species from Caenozoic deposits, including Baltic amber, these belonging not only to extinct families but existing ones as well.

In cross-section during the past one hundred years our knowledge of the systematics of the Dermaptera has grown from an acquaintance with approximately eighteen genera and less than a hundred nominal species, to a total of genera in excess of one hundred and sixty, and in the neighborhood of one thousand existing species, and in addition we now know the order carried far back into the Mesozoic period of the world's history. Our knowledge of the basic morphology, general natural history and faunistic relationships of these species is almost entirely an acquisition of the hundred year span.

The greatest need for the future from a systematic standpoint is a complete evaluation of the importance of genitalic features in relation to external morphological ones. Much has been done, but much remains to be reviewed and reappraised for

true relative values. We now have a fair picture of the supra-specific categories, although there has been far from agreement on values and relationships in a number of cases. There has developed a fair conception of specific values in this section of the insect world where there is frequently much intra-specific variation, even in the matter of alar development, as well as in the degree of development of the forceps in the same sex of numerous species.

The understanding of respective faunas is now fair for certain parts of the world. The Nearctic fauna has a very poor representation of the order, apparently because of destructive Pleistocene conditions and the slow northward penetration of Neotropical elements since that time. The Palearctic fauna, one of the richest of the order, apparently survived the Pleistocene better, probably because its eastern portion was less extensively glaciated. The Oriental and Ethiopian faunas are rich and now moderately, but far from comprehensively, known. The Neotropical fauna probably holds more yet to be discovered than any other part of the world, with, like the Ethiopian, whole subfamilies found only in that region. Some of the genera of Dermaptera such as *Esphalmenus* and *Brachylabis* pose questions which may indicate past Antarctic connections, and others suggest this to a lesser degree. Members of the Dermaptera as a whole are not readily spread by non-human means, and so may prove to be important entities in studying faunistic histories and movements. The apparently very high degree of specialization and demonstrated or assumed dependence upon a narrowly adjusted parasitic, or a least commensal, type of life, found in the Hemimerina and Arixenina, as well as the known relatively far-reaching geological history of the order, point to a marked antiquity and a prolonged period of adjustment, enhanced by the most unusual maternal instinct of the female earwig in guarding and protecting her eggs, a rare condition in non-social insects.

Observations on some Heleidae (Diptera) of the Psammolittoral Zone of Douglas Lake, Michigan *

By Roger W. Williams [1, 2]

Wiszniewski (1933) introduced the term *psammolittoral* to designate the sandy zone from an unspecified position in a lake to a region a few meters above the waters edge. Neel (1948) reported on a limnological study of the psammon (environment and assemblage of organisms of the sandy beach) of Douglas Lake, Michigan. Among the organisms he found composing the psammon were members of the insect order Diptera, family Ceratopogonidae, now usually referred to as family Heleidae. Since he was studying all the organisms of the beach sand, which were very numerous, no attempt was made to break this family down into the genera and species found. The present paper is based on a number of observations made during the summer of 1954 on several different species of Heleids which constituted a portion of the psammon of Douglas Lake in the Sedge Point Pool area and the beach of South Fish-Tail Bay.

The Sedge Point Pool area is directly across the lake from the University of Michigan Biological Station on South Fish-Tail Bay. In this area a number of sand-spit beach pools have been formed by shore dynamics. The vegetation of these pools includes a great many cat-tails, *Typha latifolia* L. The most recently formed pool is separated from Douglas Lake by a spit of sand only 10 or 15 feet wide. A dozen or less cat-tails, which were not at all common in Douglas Lake, at least in the eastern half, were growing on the Douglas Lake side of the spit. On June 24 this area was visited and many Heleid pupae were found on the *Typha* leaves of these few plants growing in Douglas Lake. On June 28 a more extensive survey was made and it was noted that these pupae could be found only on these

* Contribution from the University of Michigan Biological Station.

[1] School of Public Health of the Faculty of Medicine, Columbia University.

[2] I wish to express my sincere thanks to Dr. W. W. Wirth of the U. S. National Museum for the identification of the Heleids discussed.

leaves, none being present on any of the many *Typha* plants growing in the adjacent pool. The plants upon which these pupae were attached were growing in 10 or less inches of water and most of the pupae were attached to the leaves within 6 inches of the water surface although some had crawled a foot or more up the leaf shaft. The pupae themselves were very active when disturbed and could make their way along the leaf with the aid of sticky, transparent pads on the venter of some of the abdominal segments and spines on the body wall. Most of the pupae were on the inner surface of the leaves. Leaves were cut and pupae brought into the laboratory for rearing purposes. Here it was found, under microscopic examination, that there were many cast larval skins on the leaves, indicating that the larval stage of some of the specimens had migrated up the stems of the cat-tails onto the leaves where they had pupated. In most cases the pupae had made further migration. In the laboratory most of the adults emerged within 3 days and 4 species were recovered and identified, these being *Jenkinshelea albaria* (Coq.), *Probezzia* (*Dicrobezzia*) *sabroski* Wirth, *Johannsenomyia halteralis* Malloch, and *Probezzia atriventris* Wirth. It is of interest to note that apparently the cat-tails are of secondary importance as an ecological factor in the biology of these Heleids as evidenced by the fact that they were not found in association with the many *Typha* plants in the adjacent pools. These flies seemingly need the lake water or sand or both and some form of vegetation may be necessary for some of the species although they could not be found associated with the sedges in the lake.

On July 31 thousands of pupae of *Probezzia sabroskyi* appeared on the beach sand of South Fish-Tail Bay in front and to the west of the University of Michigan Biological Station boat house—and only in this location. The greatest concentration was found roughly opposite the north-west corner of the boat house. The number of pupae decreased east and west of this point and finally diminished to nothing. During the previous night and at the time the pupae were found the wind was blowing from the north-east toward this beach. It was apparent from the fan-like distribution of the pupae that they had dis-

persed from a focal point 30 or 40 feet out in the lake. When this area was inspected from a boat it was found that at this point there was a clump of submerged pondweed, *Potamogeton natans* L., which had a few leaves breaking the surface. These leaves were covered with Heleid egg masses. One of the larger leaves, measuring 13 cm. in length, had 170 egg masses attached to the dorsal surface. Under laboratory conditions some of these eggs hatched in from 3 to 6 days and were identifiable as Heleid larvae. They did not, however, survive the trip back to New York and as a result the species to which these eggs belonged is in doubt but it seems probable that they were eggs of *P. sabroski*. Further ecological association of this species with *Potamogeton* is not known. Adults, from these pupae collected on the beach, emerged in the laboratory in 6 days.

A single, somewhat larger pupa, was isolated from those of *P. sabroski* collected on the beach. The adult which emerged a few days later was identified as *Sphaeromias* (*Palpomyia*) *longipennis* (Loew).

On July 27 a number of large Heleid larvae were isolated from the psammon samples taken by the limnology class. Further effort was made on my part to isolate similar samples and fair results were achieved. They were collected by mixing ½ to ⅔ a bucket of beach sand with lake water and pouring into a small "bucket" type plankton net. After the water had passed through the net the contents of the brass bucket were emptied into a white enamel pan where the larvae could be seen swimming about and could be withdrawn with a pipette. One or two larvae were found per bucket of sand. It is not known whether this relatively meager population represented a normal population for this area throughout the summer or represented a seasonal low. Neel (1948) made no study of the South Fish-Tail Bay beach but he did find that in one area of the lake the beach contained a Heleid larval population as high as 37 per c.c. of sand. Most were found from 2 meters above the lake edge to 5 meters below and in the top 3 cm. of sand. The larvae I recovered seemed to be most numerous at the waters edge.

Before pupating a dark pigmented area became visible behind the head. Larvae, in laboratory rearing jars, having this mark-

ing swam around and around the jar at surface level without burrowing into the sand at the bottom. Another jar was set up in such a manner that a miniature beach above water level was formed. Five larvae, having the pigmented area behind the head, were placed one at a time in the "deep" water of the container. Each swam at surface level until making contact with the miniature beach, then immediately burrowed into the sand. Six hours later two were recovered as pupae and all had pupated by the next day. It would appear that when these larvae are ready to pupate in nature they swim at surface level until making contact with the beach sand, there tunnel in and pupate. Ten days after these five larvae pupated they emerged as adults of *Dicrohelea argentata* (Lowes).

Summary and Conclusion

Three species of the family Heleidae, order Diptera, were isolated from the psammolittoral zone of Douglas Lake, Michigan. Two of these, *Probezzia sabroski* and *Sphaeromias longipennis,* were recovered as pupae while *Dicrohelea argentata* was isolated from the beach sand in the larval stage; all were reared to adults in the laboratory. *Jenkinshelea albaria, Johannsenomyia halteralis* and *Probezzia atriventris* (as well as *P. sabroski*) were taken as pupae on the leaves of *Typha latifolia* growing in the lake. Adults emerged in the laboratory. These species are undoubtedly a portion of the psammon of the lake during some stage of their development.

The two species of *Probezzia* have been reported from Michigan. Although specimens of the other species have been taken in Michigan and are in the collection of the U. S. National Museum,[3] no published report has previously been made of their occurrence there.

It is probable that these six species represent only a fraction of the total number of Heleid species which may be found in the psammolittoral zone of Douglas Lake and since this study is biologically incomplete this field of investigation is open for considerably more study in the future.

[3] Personal communication from Dr. W. W. Wirth.

REFERENCES

NEEL, J. K. 1948. A limnological investigation of the psammon in Douglas Lake, Michigan, with especial reference to shoal and shoreline dynamics. Trans. Amer. Micros. Soc. 62: 1–53.

WISZNIEWSKI, J. 1933. Remarques sur les conditions de la vie du psammon lacustre. Verh. Int. Ver. f. theor. u. angew. Limnol., 6: 263–274.

Some Notes on Neotropical Stagbeetles. (Coleoptera: Lucanidae)

By BERNARD BENESH, Burrville, Tennessee

The purpose of the present contribution is three-fold: 1) to define certain neotropical genera of Lucanidae; 2) to record corrections to errors, affecting the foregoing group of insects, appearing in the recently issued "Catalogue illustré" by Didier and Seguy (1953), and 3) to describe an insect catalogued by Germain (1911) as *Sclerognathus nitidus*, which remained a bare name to this date.

The nondescript insect is a component of a small lot of Chilean stagbeetles, on loan from the Museo Nacional, Santiago, Chile, destined for monographing the genus *Pycnosiphorus* Solier. I am under deep obligation to Dr. G. Kuschel, Universidad de Santiago, who was instrumental in securing the loan, to whom I herewith render my sincere thanks.

Tribe SCLEROSTOMINI

The genera *Pycnosiphorus* Solier (1851) and *Sclerostomus* Burmeister (1847), hitherto included in DORCINAE, form a distinctive tribe, for which the name SCLEROSTOMINI is here proposed. The tribe has analogous characters to FIGULINAE, as defined by Burmeister (1847), where both sexes have the buccal appendages (inner maxillary lobe or lacinia) uncinate or hooked, and the female genitalia bear styli, the last analogous to the subfamilies SINODENDRINAE, AESALINAE, SYNDESINAE and LAMPRIMINAE.

The tribe SCLEROSTOMINI can be readily separated from FIGULINI and NIGIDIINI, by being dimorphic,[1] and not having the eyes completely circumscribed by the canthi; the genera comprising the tribe can be at once distinguished by their antennae, which have the clava of figuline aspect in *Sclerostomus* (clava glabrous, sensory area confined to anterior face of the segments), and dorcine in PYCNOSIPHORUS (clava lobate, the segments spongiose and pubescent throughout, analogous to DORCINAE).

The tribe SCLEROSTOMINI, as pointed out by Westwood (1855), differs from the DORCINAE, in that both sexes have the buccal appendages uncinate (in DORCINAE the female only) and the female genitalia bearing styli (simple in DORCINAE).

Pycnosiphorus Solier

The members of this genus are known to occur in the extreme south-western tip of South America (Argentina and Chile), with two additional species, as yet unrecorded, from Ecuador (*caelatus* (Blanch.)) and Peru (*mandibularis* (Solier)); they form two homogenous groups, with pronounced sectional characteristics, i.e., structure of the head, mandibles and compressed or excavated pronotum, and the presence of a pronotal tubercle. According to those characters, the *femoralis* group has the head (both sexes) triangularly depressed, base of triangle to front, extending from the occiput to front, pronotum without a frontal tubercle; the *mandibularis* group, as the name implies, has distinctive mandibles, head deeply, semicircularly excavated, pronotum (both sexes) with an antero-median tubercle. A very distinctive character, pointed out by Arrow (1943), is "a very broad depression in the middle of the pronotum," which is absent in *Sclerostomus*, or at most feebly indicated by a simple canaliculation, or replaced by a cornute process, as exemplified by *S. cucullatus* (Blanch.).

In the "Catalogue illustré" by Didier and Seguy (1953), the species of *Pycnosiphorus* are so confused and indiscriminately intermixed that to make the catalogue of some practical value, the following correction must be made.

[1] Except *Sclerostomus tuberculatus* (Solier), as far as known.

Of the thirty species assigned to *Pycnosiphorus,* ten (*aurocinctus* Boil., *denticulatus* Lued., *dentifer* (Möllenk.), *marginivillosus* Lued., *rotundatus* Boil., *securiformis* Lued., *signatipennis* Deyr., *sulcicollis* (Möllenk.), *truncatus* Lued., *tucumanus* Nagel) must be transferred to *Sclerostomus,* and one (*tristis* Deyr.) removed to *Apterodorcus,* if Deyrolle's description is accepted as valid, and the comparison, with *A. bacchus* (Hope et Westw.), is (proved to be) correct. *Tristis* was referred by Benesh (1945) to *Apterodorcus,* solely on its comparison by Deyrolle with *A. bacchus;* Didier and Seguy have assigned the species to *Pycnosiphorus,* without indicating their reason for the action.

Sclerostomus Burmeister

In uniting *Sclerostomus* and *Scortizus,* suppressing the first, Arrow (1943) overlooked, or disregarded, one character, pointed out by Westwood (1855), which separates the two genera. As previously indicated for the tribe SCLEROSTOMINI, *Sclerostomus* has the buccal appendages (in both sexes) uncinate, which certainly does not apply to *Scortizus,* reported by Westwood to have the buccal appendages simple in the male, uncinate or hooked in female.

In accepting Arrow's views, without serious research on their part, Didier and Seguy assigned five species (*buckleyi* Waterh., *costatus* (Hope et Westw.), *gounellei* (Boil.), *ruficollis* (Lued.), and *tuberculatus* (Solier)) to *Scortizus,* which are all, in fact, true members of *Sclerostomus,* as defined by Burmeister (1847).

Sclerostomus nitidus Benesh, n. sp.

Sclerognathus nitidus Germain, Bol. Museo Nacional, Santiago, III, 1911, p. 66, nom. nud.

Diagnosis: black, nitid, allied to *S. tuberculatus* (Solier), but broader, and more convex.

♀. Head broader than long (1.1 × 2.8 mm.), declivous from occiput to the front, slightly excavated in center, center ocellate-punctate, the punctures gradually diminishing in size towards the margins. Anterior margin nearly straight, clypeus pro-

duced, rounded; antero-lateral angles obtuse, obscurely emarginate to canthi; canthus anteriorly arcuate and parallel opposite to and half-way circumscribing the eye; eyes fairly large, parallel; post-ocular portion slightly converging to base. Mandibles shorter than the head, externally arcuate and keeled, inner edge with a single ante-median simple tooth. Antennae ten-jointed, clava composed of three segments, of figuline aspect.

Pronotum one and one-half times as long as broad, strongly convex, anterior margin sinuous; antero-lateral angles produced and acuminate, projecting well beyond the anterior margin; sides arcuate and diverging to basal third, thence gently convergent to basal angles, which are nearly square, basal margin uneven, with center broadly concave. Center of the anterior area with ovate depression, the latter with several close large punctures within and demarcated on each side and at base by a conical tubercle, as in *tuberculatus*. Punctured throughout, but less closely than the head, the punctures reduced in size and intensity in lateral declivity.

Scutellum broader than long (.5 × .3 mm.), parabolic, with a few fine punctures. Elytra one and one-half times as long as broad, broadest at the juncture of the median and apical thirds, apex rounded; humeri slightly oblique and produced, mucronate, extending well beyond the scutellum; sculptured from suture to the humeri with six striae-like rows of large, circular punctures, with smaller, less numerous punctures between the rows and on lateral margins; apical angles strongly punctured.

Legs short and stout; anterior tibiae externally strongly furcate and denticulate from the furcation to the knees by four progressively reduced teeth; intermediate and posterior tibiae with a single median spine.

Venter strongly punctured throughout, the femora less so; abdomen strongly nitid. Mentum transverse, closely cribripunctate throughout, opaque, twice as broad as long, anterior margin broadly concave, antero-lateral angles obtusely rounded, base straight, center feebly depressed.

♂ unknown.

Holotype: a female, without locality, bearing two labels: *Dorcus nitidus* Ph., 1399, and *D. nitidus* Ph., 1773, in Museo Nacional, Santiago, Chile.

Described from a unique specimen, named, but not described, by Philippi as ***nitidus,*** which name is here retained. It was subsequently recorded by Germain (1911) as *Sclerognathus nitidus.*

S. nitidus can be readily separated from *tuberculatus,* by its greater convexity and posterior width, more shiny aspect and non-tuberculate elytra, which in *tuberculatus* are costate from the suture to humeri, the three costae broken and forming oblong tubercles, the humeri less projecting and right angled, the head less declivous, pronotum laterally less arcuate, etc.

Measurements (in millimeters) of *S. nitidus* and *tuberculatus,* used for comparison and definition of the new species, follow:

	length × width	
	nitidus n. sp.	*tuberculatus*
Head (incl. mandibles)	1.5 × 2.8	1.6 × 2.8
Pronotum	3.5 × 5.0	3.5 × 4.6
Elytra [2]	7.5 × 5.2	7.6 × 4.8
Overall	12.5	12.7

Colocephalaria Didier

In "A systematic revision of the Holarctic genus *Platycerus* Geoffroy," Benesh (1946) declared the genus *Colocephalaria* Didier (1929) congeneric with *Metadorcus* Parry (1870), recommending suppression of the "new genus" as superfluous and unnecessary in systematics of Lucanidae. This was based, of course, on the characteristics of the male, as described and figured by Deyrolle (1864).

Upon further exploration of the matter, it must be recorded here that *Colocephalaria,* as conceived by Didier (1929), is composite; the male, described by Deyrolle (1864) as *Platycerus ebeninus,* being a true *Metadorcus,* and a female, identified by Boileau as ***ebeninus,*** in Didier's collection (ex-coll. Boileau), proves to be a true member of *Sclerostomus.* The latter appertains to the *rotundatus* group, particularly to *tucu-*

[2] From base of scutellum.

manus Nagel (1932), of which the female has been just recently described by Martinez (1953), and whose description is not recorded in the "Catalogue illustré," apparently being unknown to the authors.

Obviously Didier was unduly influenced by the suggestion in the last paragraph of Deyrolle's description, which he records verbatim as follows: "Peut-être les antennes, le prosternum, les cuises et les tibias fourniraient-ils des caractères pour former un genre distinct? Dans tous les cas, ils font de cet Insecte une division bien tranchée de celle des espèces typiques."

It is manifest that Didier in his anxiety and haste to provide a new name for the insect, and add another "mihi" to his credit, overlooked the fact that the male *Platycerus ebeninus,* which perhaps was unknown to him in nature, and which he certainly did not have before him, has every character assigned by Parry (1870) to *Metadorcus,* with "head broad, antennae short, four anterior tibiae *indistinctly denticulate, posterior unarmed.*" [3] In addition, Didier overlooked the figure, accompanying the description of *P. ebeninus,* which clearly shows the intermediate tibiae with one spine, posterior tibiae unarmed, a feature entirely at variance with the female brought forward as that of *ebeninus,* with intermediate tibiae tri-spinose, posterior ones bi-spinose.

From the preceding we readily understand that Didier (1929) and Seguy (1953) are apparently unable to distinguish between existing genera, in present instance *Metadorcus* and *Sclerostomus,* inducing them to devise "new genera" as *Colocephalaria, Caprinigidius, Cladognathinus* and *Chiasognathinus,* "genera" of doubtful usefulness and little scientific value, only adding to the clutter of redundant synonymic names.

In recording again *Colocephalaria,* after its suppression by Benesh (1946) as another superfluous synonym, Didier and Seguy (1953) by inadvertence omitted, or carefully avoided, recording the position taken by Benesh, thus making their "Catalogue illustré" somewhat incomplete and out of date; whether the authors considered it relevant or not, the record should have appeared in the opus.

[3] The italics are the author's.

Tribe SCORTIZINI

The genera *Scortizus, Leptinopterus,*[4] *Charagmophorus, Auxicerus, Apterodorcus* and *Dorculus,* with sectional characters indicated anteriorly for *Scortizus,* form another distinctive tribe, for which the name SCORTIZINI, suggested by W. Douglas Hincks, Manchester Museum, is proposed. This tribe, as indicated by Benesh (1945) for *Apterodorcus,* shows phylogenetic affinity to LAMPRIMINAE, in which subfamily it is included, in the second edition Coleopterorum Catalogus, Pars Lucanidae. I am not positive, at this date, whether *Auxicerus* and *Dorculus* definitely belong here; *Dorculus* and the female *Auxicerus* are unknown to me in nature, the former being placed here solely on account of its great similarity to *Dendroblax,* a member of the tribe LAMPRIMINI.

Under *Scortizus,* as conceived by Westwood (1834), are included four species, in deference to Westwood's expressed opinion (1855), as follows: *cruentus* (Burm.), *maculatus* (Klug), *plagiatus* (Burm.), and *pulverosus* Westw.; the first three species are members of the Brazilian fauna, whilst the last occurs in Colombia. A new species, as yet undescribed, has recently been discovered, by Señor Martinez, in Bolivia. It approximates closely *S. maculatus,* its chief characteristics being the total absence of squamae, from which *maculatus* derives its name.

Metadorcus Parry

According to Didier and Seguy (1953), the type of *Metadorcus* Parry (1870) is *Leptinopterus rotundatus;* this is incorrect. The type is *Psalidostomus rotundatus,* as the species *rotundatus* was originally described under that generic name; it was subsequently recorded by Parry (1864) as *Leptinopterus,* and in 1870 declared the type of *Metadorcus.*

I am indebted to Dr. Henry F. Howden, University of Tennessee, Knoxville, Tenn., for reading and correcting the present manuscript.

[4] I herewith thank Mr. E. B. Britton, British Museum (Nat. Hist.), for a specimen of *Leptinopterus v-nigrum* (Hope et Westw.) ♀, supplied to be used for dissection, to definitely place the genus.

Bibliography

Arrow, G. J. 1943. Proc. R. Ent. Soc., London (B), 12: 133–143.
Benesh, B. 1945. Ent. News, 56: 229–234.
——. 1946. Trans. Amer. Ent. Soc., 72: 139–202 (cf. p. 144, footnote 13).
Burmeister, H. C. C. 1847. Handbuch der Entomologie, Band V, pp. 304–442, 527–530.
Deyrolle, H. 1864. Ann. Soc. Ent. Fr., 4: 311–320.
Didier, R. 1929. Études sur les Coleop. Lucan. du Globe, fasc. V, p. 124.
—— et E. Seguy. 1953. Catalogue illustré des Lucanides du Globe. Encycl. Ent., A, 27: 1–223.
Germain, P. 1911. Bol. Mus. Nac., Santiago, 3: 47–73.
Martinez, A. 1953. Rev. Soc. Ent. Argentina, 16: 42–48.
Nagel, P. 1932. Ent. Blätter, 28: 113–121.
Parry, F. J. S. 1862. Proc. Ent. Soc., London, pp. 107–113.
——. 1864. Trans. Ent. Soc., London, ser. 3, 2: 1–113.
——. 1870. Trans. Ent. Soc., London, (1), pp. 53–118.
Solier, A. J. J. 1851. Gay's Hist. fis. y pol. de Chile, Zoologia, 5: 39–57.
Westwood, J. O. 1834. Ann. Sci. Nat., Zool. ser. 2, 1: 112–124.
——. 1855. Trans. Ent. Soc., London, ser. 2, 3: 197–221.

Two New Species in the Genera Dipogon Fox and Minagenia Banks (Hymenoptera, Psammocharidae)

By R. R. Dreisbach, Midland, Michigan

Since my paper on these genera was written the following new species have turned up and are described below.

Dipogon hondurensis n. sp.

Holotype female: body completely black, with slightly bluish tinge on head and thorax with abdomen black and shining; a few long upright reddish hairs on clypeus, more numerous blackish red ones on vertex, posterior orbits with fewer ones on fore coxae, pronotum, mesonotum, propodeum and dorsal and ventral surface of abdomen; the clypeus, lower face, anterior orbits, and most of thorax covered with appressed, slightly

golden pubescence; the abdomen with very closely appressed fine yellowish pubescence, the long hair on last tergite yellowish; apical half of mandibles yellowish, three toothed, beard on each cardo strong, long and reddish yellow; labial palpi short, maxillary palpi long and slender, both brownish; antennae situated just above clypeus, yellowish, lighter below, third joint longer than first two together and longer than fourth, rather slender; clypeus almost truncate at apex, slightly arched in profile, yellowish tip of labrum just visible below it; in front view vertex in a slight arch above eyes, oval, a sulcus from base of antennae to fore ocellus, almost evanescent at ocellus, head slightly broader than pronotum, ocelli small, the laterals about as far apart as their distance to eyes; interocular distance 0.53 times transfacial distance; from side ocelli and vertex not visible, front slightly raised, posterior orbits broad and about three fourths as wide as eyes; pronotum slightly shorter than mesonotum, propodeum sloping in a smooth curve; wings with veins at extreme base and tegula yellowish, rest brown; a broad black bank across fore wings over basal veins, a second broad one over marginal cell, extending through last two cubital cells to posterior vein of third discoidal cell, the wing between bands hyaline, slightly yellowish, the tip of wing beyond cells is milky white. Tips of rear wings darker than rest of wing, basal vein and transverse in forewings, and cubital and anal veins in rear wings much disjointed; second cubital cell almost a parallelogram, the first and second intercubital veins curve inward, the third cubital cell about three times as long on cubital as on marginal veins, outer vein curved inward, third cell longer than second; second recurrent vein strongly bent outward at middle, meets third cell about basal third; median vein does not extend to outer margin of wings; abdomen widest before middle, slightly before apex of second tergite; legs all black to near apex of tibiae which are marked with yellowish near apex and for a greater distance on under side, all tarsi yellowish, all legs more or less covered with sericeous yellowish hairs.

Length: head and thorax 4.64 mm., abdomen 4.64 mm., forewing 9.1 mm., rear wing 6.62 mm.

Holotype female: Tela, HONDURAS, April, Bates (MCZ).

This species runs to couplet 9 of my key to the genus.[1] It can be separated from the two species there as follows:

9. Same as 9.....*femur-aureus* Dreisbach
9. Legs all black at least to apex of tibiae.....10
10. Legs all black as well as rest of body; dark band over basal veins in forewing absent or very faint; wing tip beyond cells hyaline *not milky white,* tip of rear wings hyaline slightly fumous as rest of wing: U. S.....*pulchripennis* (Cresson)
10. Tarsi all yellowish, as well as the antennae, apical half of mandibles and exposed part of mentum; dark band over basals in fore wing strong, dark; wing tip in fore wings beyond cells *milky white,* tip of rear wings darker than rest of wing.....*hondurensis* n. sp.

Minagenia lutea n. sp.

Holotype female: head black, except antennae, apical half of mandibles, visible part of mentum and fore part of clypeus which are dull yellowish, and labial and maxillary palpi which are bright yellow; thorax black, except for faint traces of yellow on lower edge of pronotum; abdomen and legs completely bright yellow except the base of first tergite is black; when seen from in front vertex almost straight across, a slight sulcus from base of antennae halfway to fore ocellus, antennae just above clypeus, which is truncate in front; from the side the clypeus is flat and only the front at base of antennae barely visible, posterior orbits very narrow, eyes very large; lateral ocelli nearer eyes than each other; interocular distance 0.43 times transfacial distance; pronotum almost vertical in front, dorsal surface almost horizontal, about as long as mesonotum; both head and thorax devoid of hair but with very fine appressed whitish pubescence; abdomen and legs of same color and with fine whitish glistening pubescence in various reflected light; transverse vein in fore wing slightly basad of basal vein and cubital in rear wings very much basad of subdiscoidal; wings slightly fumous with a faint indication of cloud in last two cubital cells, the third cubital cell with the second and third intercubital veins parallel and both bowed

[1] Dreisbach, R. R. 1953. New species in the Genera Dipogon Fox and Minagenia Banks (Hymenoptera: Psammocharidae) with keys to species and photomicrographs of genital parts. The American Midland Naturalist, 49 (3): 832–845.

outward as is usual with the genus; longer spur of posterior tibiae one half length of its metatarsal joint.

Length: head and thorax 4.64 mm., abdomen 3.5 mm., forewing 5.7 mm., rear wing 4.1 mm.

Holotype female: Vinita Indian T., June 7–8, 1899, Wickham (Am. Museum).

This species will run to couplet 2 in my recent key to the genus [1] and can be separated from congrua (Cresson) as follows:

2. Abdomen completely red; legs and spurs black except fore tibiae yellowish.....*congrua* (Cresson)
2a. Abdomen completely yellowish red; legs and spurs completely yellowish red, same color as abdomen....*lutea* n. sp.

Concerning the Genotypes of Bothropolys, Polybothrus and Eupolybothrus (Chilopoda: Lithobiomorpha: Lithobiidae)

By Ralph E. Crabill, Jr., Department of Biology,
Saint Louis University

My excuse for the present discussion is to begin the attempt to clarify the nomenclatorial status of the various generic names now attributable to the lithobiomorphous Ethypolyinae, a group whose zoological organization seems much better understood than does that of the troublesome and difficult Lithobiinae. I hope that this and subsequent studies will facilitate further work upon the material entities invloved in perhaps the one section of the order where there seems to be some chance of our arriving at a satisfactory generic interpretation in the foreseeable future. But until we can be sure of the labels that we must attach to the physical objects of our investigations, the problems at hand will continue to prove, if not impossible, at least chaotic.

Undoubtedly the focus of the difficulty lies in Latzel's Poltergeist genus *Polybothrus* and in certain authors'—notably Verhoeff's—reluctance to exorcise it from the premises once and for all. Briefly stated the problem is this. In 1862 [1] H. C.

[1] Journ. Acad. Nat. Sci. Philadelphia, (n.s.) V, p. 15.

Wood in this country proposed a new genus, *Bothropolys,* for the reception of three new species, *nobilis, xanti,* and *bipunctatus.* Of these *nobilis* was later shown to be a synonym of an earlier name, *Lithobius multidentatus* Newport, 1844. To the best of my knowledge the first attempt to fix the genotype of *Bothropolys* was undertaken by Chamberlin, who in 1912[2] selected "*B. multidentatus* (Newport)" as the type. At first glance there seems to be justification for his action, for Wood himself had admitted later that his *nobilis* was really referable to the earlier Newport species. However, *multidentatus* was not available for consideration as the genotype of *Bothropolys* because that particular name had not been included by Wood in the original description of his 1862 genus. *The type species of a genus is a nomenclatorial, not a zoological species;* it is but a name on paper that is only indirectly and quite subjectively associated with all of the specimens to which it seems to apply (with the exception of the holotypical specimen to which it applies directly and objectively). The fact that everyone agrees that *multidentatus* is a senior synonym of *nobilis* can have no real bearing upon the question of the fixation of the nomenclatorial genotype, for in this instance the type of the genus can be determined objectively. To conclude that *multidentatus* is the type of *Bothropolys* is strictly a subjective interpretation and as such is always subject to revision. Had Chamberlin in 1912 designated *Bothropolys nobilis* as the type species and clarified the pertinent synonymy, his action would have been acceptable. The genotype of *Bothropolys* is *Bothropolys nobilis* Wood, 1862 (an objective fact), which species we believe to be the junior synonym of *Lithobius multidentatus* Newport, 1844 (a subjective interpretation).

In 1880[3] Latzel in Vienna declared *Bothropolys* to be, although "natural" and zoologically justifiable, etymologically objectionable ("falsch gebildet") because of the relative positions of the word's two constituent parts. Accordingly, he transposed them to form a substitute name, *Polybothrus.* Al-

[2] Can. Ent., XLIV, p. 173.
[3] Myriap. Öst.-Ung. Monarchie, p. 35.

though Chamberlin pointed out in 1925 and again in 1952 [4] that Latzel's action could not be justified and that his new name represents an invalid emendation of *Bothropolys, Polybothrus* has been used, primarily in Europe, regularly until almost the present time. And on the authority of the recently enacted "Copenhagen Decisions on Zoological Nomenclature" (pp. 44–45, PP. 71 and 72) *Polybothrus* may be seen to be an Invalid Emendation and junior objective synonym of the older Wood name. Therefore, inasmuch as *nobilis* (zoologically equal to *multidentatus*) is the genotype of *Bothropolys* (by present designation), the same species, *nobilis,* is *ipso facto* the type of *Polybothrus,* for if an emendation is proposed to replace an older name, the type of either when established becomes the type of the other.

In 1907 [5] another source of confusion was introduced by Verhoeff's proposal of seven subgenera which he distributed between the invalid *Polybothrus* and the valid *Bothropolys*; at the time he considered each genus valid. He presented his subgenera quite casually in two keys, one for *Polybothrus,* one for *Bothropolys,* but he referred no species by name or by indirection to any one of them. In 1925 (op. cit.) Chamberlin stated that these subgenera are "difficult to apply and also really without standing" because no species were originally associated with them; consequently he rejected them all as *nomina nuda.* But he rescued one name, *Eupolybothrus,* called it a new genus, and designated *Lithobius grossipes* L. Koch, 1862 [6] as its genotype. However, none of Verhoeff's subgenera is a *nomen nudum,* for they were originally published with key characterizations. Therefore the Verhoeff subgenera are available. *Eupolybothrus* was validated by Chamberlin in 1925, its genotype is *Lithobius grossipes* L. Koch, 1862, but it must be attributed to Verhoeff, 1907, not to Chamberlin, 1925.

Following is a summary of the conclusions reached in the foregoing account.

[4] 1925, Bull. Mus. Comp. Zool. Harvard, LVII, p. 386. 1952, Revue Fac. Sci. Univ. D'Istanbul, (B) XVII (3), p. 211.

[5] Bronns Klassen u. Ordnungen, V, p. 241.

[6] Die Myriap. Gattung Lithobius, pp. 27 and 32.

Bothropolys Wood, 1862.
Type: *Bothropolys nobilis* Wood, 1862.
Method of fixation: by present designation.
Subjective status of type species: equal to *Bothropolys multidentatus* (Newport), 1844.

Polybothrus Latzel, 1880.
Type: *Bothropolys nobilis* Wood, 1862.
Method of fixation: through objective synonymy with *Bothropolys* whose type, *nobilis*, is here fixed. (Isogenotypic through synonymy.)

Eupolybothrus Verhoeff, 1907. (Proposed without included species.)
Type: *Lithobius grossipes* L. Koch, 1862.
Method of fixation: by the subsequent designation of Chamberlin (1925) and through his inclusion (1925) in the genus of a single, initial species, *grossipes*.

Review

NEEDHAM, J. G. and M. J. WESTFALL, JR. 1955. A Manual of the Dragonflies of North America (Anisoptera), including the Greater Antilles and the Provinces of the Mexican Border. University of California Press, Berkeley and Los Angeles. xii + 615 pp. $12.50.

Enthusiasts of few orders of insects have been so fortunate as those interested in the taxonomy and ecology of the Odonata. This order, in North America, has been the subject of two recent works (for a review of the first see Ent. News LXV:109), the second of which is the volume now being reviewed. This delightfully written and superbly illustrated book is a pleasing blend of fine prose, accurate information and stimulation to both learning and observing. It is written in such a style as to be available to the interested layman and student alike. The initial chapter treats the external morphology of adult and larval anisopterans with particular attention being paid to the structures of taxonomic significance. Ecological facts are interpolated with morphological ones in this chapter as well as in the following one which is called "field studies." This section is devoted to behavior patterns and the collection and preservation

of specimens. Special attention is paid to collection techniques for nymphs and directions for rearing procedures of the same are given. Then follows a short chapter listing the abbreviations used for authors and localities, a short bibliography of important and frequently referred to titles and suggestions for the proper use of the manual. This chapter also contains a list of the genera and species treated.

The bulk of the book is devoted to the systematic classification of the dragonflies, keys for their determination and geographic distribution. Each of the families, subfamilies, genera and species is treated in turn with a brief description. Distribution is indicated by Canadian provinces and by states of this country and Mexico, while earliest and latest dates of capture of adults are given for each species. For many genera a "table of species" (really a kind of easy-to-use key) is presented to either nymphs or adults of that genus and occasionally to both.

The volume ends with a glossary of technical terms, a list of synonyms (with page reference) and an index.

It is the outstanding quality of the photographs (nearly all made by the junior author) used to illustrate descriptions and key characters which absorbed my full attention upon first looking over the work. The best of these are of the nymphs, and are large, clear and very sharp. They should prove to be invaluable to collectors of stream and pond faunas and to all who work the keys.

This work is a valuable addition to the literature of the Odonata.—HAROLD J. GRANT, JR.

Nomenclature Notice

All comments relating to the following should be marked with the file number and sent to Francis Hemming, 28 Park Village East, Regent's Park, London N.W.1, England.

Neanura MacGillivray, 1893, and **Hypogastrura** Bourlet, 1839, designation of type species for; **Achorutes** Templeton, 1835, suppression of (Order Collembola) (pp. 38–48) (File Z.N. (S.) 303).

Crenophilus, validation of, as from d'Orchymont, 1942; **aeneus** Germar, 1824, as published in the combination *Hydrophilus aeneus,* validation of (Order Coleoptera) (pp. 49–55) (File Z.N. (S.) 752).

Anurophorus Nicolet, [1842], designation of type species for (Order Collembola) (pp. 68–70) (File Z.N. (S.) 304).

For details see *Bull. Zool. Nomencl.* Part 2 of Volume 11.

EXCHANGES

This column is intended only for wants and exchanges, not for advertisements of goods for sale or services rendered. Notices not exceeding three lines free to subscribers.

These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and, only when necessary those at the top (being longest in) are discontinued.

Cynipid and Itonidid galls—American species wanted; purchase or exchange for British species. Fresh or dried. D. Leatherdale, F.R.E.S., Old Woodstock, Oxford, England.

Wanted—Reprints or papers concerning insects taken in Alaska for inclusion in list of Alaskan insects. R. H. Washburn, Alaska Experiment Station, Palmer, Alaska.

Conopidae of the World wanted. Will pay 10¢ to $1.00 for pinned and labelled specimens. S. Camras, 4407 N. Milwaukee Ave., Chicago 30, Illinois.

Anisoptera—Nearctic sp. wanted for exchange, espec. Ophiog., Arigom., Aeschna, Neurocor., Somatoc., Cordulia, Dorocor., Leucor. R. D. Cuyler, Dept. of Entomology, N. C. State College, Raleigh, N. C.

Bembicini and Stizini (Hym., Sphec.) of New World wanted for revis. study. Will return upon request or at end of project. James E. Gillaspy, Dept. of Zoology, Univ. Texas, Austin 12, Texas.

Agapema galbina. Will exchange cocoons of this moth for nature books. E. Frizzell, Route 4, Box 96, San Benito, Texas.

Wanted—Data on exact location of colonies of *Epibembex* (olim *Bembix*) (Hymenoptera), any species, any part of country, for biological studies. Howard E. Evans, Dept. Entomology, Cornell Univ., Ithaca, N. Y.

Fanniinae wanted on loan (nearctic and holarctic), and information on collections. James G. Chillcott, Dept. Entom., Univ. of Kansas, Lawrence, Kan. (Loans may be charged to Dr. C. D. Michener.)

Original Karlsbader DURABILE Insect Pins

First class, **hand made** pins. Now, again, in sizes No. 000 to 7. Price US $1.90 per 1000, f.o.b. Eschwege. Minimum order 5000, less 10% on over 50,000. Send postal money, or check with order, or use confirmed bank credit (Bank Cto. 5593 Commerz-u. Creditbank, Eschwege/Werra.

FELIX SAVAETE, Eschwege/Werra, Germany.

Important Mosquito Works

MOSQUITO ATLAS. Part I. The Nearctic Anopheles, important malarial vectors of the Americas, and Aedes aegypti and Culex quinquefasciata

MOSQUITO ATLAS. Part II. The more important malaria vectors of the Old World: Europe, Asia, Africa and South Pacific region

By Edward S. Ross and H. Radclyffe Roberts

Price, 60 cents each (U. S. Currency) with order, postpaid within the United States; 65 cents, foreign.

KEYS TO THE ANOPHELINE MOSQUITOES OF THE WORLD

With notes on their Identification, Distribution, Biology and Relation to Malaria. By Paul F. Russell, Lloyd E. Rozeboom and Alan Stone

Mailed on receipt of price, $2.00 U. S. Currency. Foreign Delivery $2.10.

For sale by the American Entomological Society, 1900 Race Street, Philadelphia 3, Pa., U. S. A.

Just Published

New Classified Price Lists

Available separates from the TRANSACTIONS OF THE AMERICAN ENTOMOLOGICAL SOCIETY and ENTOMOLOGICAL NEWS, and all titles of the Society's MEMOIRS have been catalogued by author in twelve special price lists in the following categories:

Coleoptera	**Neuroptera and Smaller Orders**
Diptera	**Odonata**
Hemiptera	**Orthoptera-Dermaptera**
Hymenoptera	**Arachnida and Other Classes**
Lepidoptera	**Bibliography-Biography**
Memoirs	**General**

Lists will be mailed free upon request. Please state specifically which list or lists you require.

The American Entomological Society
1900 RACE STREET
PHILADELPHIA 3, PENNSYLVANIA

MEMOIRS OF THE AMERICAN ENTOMOLOGICAL SOCIETY

The Society offers for sale the 14 numbers of this important and steadily growing series of longer monographic works, all numbers of which are still in stock.

1.—Cresson (Ezra T.)—The Cresson Types of Hymenoptera (141 pp., 1916) ..... $ 3.00

2. —Hebard (Morgan)—The Blattidae of North America, North of the Mexican Boundary (284 pp., 10 pls., 1917) 5.50

3.—Munz (Philip A.)—A Venational Study of the Suborder Zygoptera (Odonata), with Keys for the Identification of Genera (78 pp., 20 pls., 1919) 2.00

4.—Hebard (Morgan)—The Blattidae of Panama (148 pp., 60 pls., 1920) 3.00

5.—Cresson (Ezra T.)—The Type of Hymenoptera in the Academy of Natural Sciences of Philadelphia other than those of Ezra T. Cresson (90 pp., 1928) 2.00

6.—Rivnay (Ezekiel)—Revision of the Rhipiphoridae of North and Central America (Coleoptera) (68 pp., 4 pls., 1929) 2.00

7.—Leonard (Mortimer D.)—A Revision of the Dipterous Family Rhagionidae (Leptidae) in the United States and Canada (182 pp., 3 pls., 1930) 4.50

8.—Rehn (James A. G. and Rehn, John W. H.)—The Eumastacinae of southern Mexico and Central America (84 pp., 6 pls., 1934) .. 2.50

9.—Pate (V. S. L.)—The Generic Names of the Sphecoid Wasps and their type species (103 pp., 1937) 2.50

10.—Huckett (H. C.)—A Revision of the North American species belonging to the genus Pegomyia (131 pp., 9 pls., 1941) 3.00

11. —Townes (Henry K., Jr.)—Catalogue and reclassification of The Nearctic Ichneumonidae (925 pp., 1944) 15.00

12.—Phillips (Venia Tarris)—The Biology and Identification of Trypetid Larvae (161 jj., 16 pls., 1946) 5.00

13.—Braun (Annette F.)—Elachistidae of North America (Microlepidoptera) (110 pp., 26 pls., 1948) 4.50

14.—Rehn (John W. H.)—Classification of the Blattaria as indicated by their Wings (134 pp., 13 pls., 1951) 5.00

THE AMERICAN ENTOMOLOGICAL SOCIETY

1900 RACE STREET, PHILADELPHIA 3, PA.